

B.E/B.TECH. Degree Examination, December 2020
Second Semester
IT18201 – OOPS USING C++ AND PYTHON
(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. What will be the output of the following C++ code?

```
#include <iostream>
#include <string>
using namespace std;
class A
{
int a;
public:
virtual void func() = 0;
};
class B: public A
{
public:
void func(){
cout<<"Class B"<<endl;
}
};
int main(int argc, char const *argv[])
{
B b;
b.func();
return 0;
}
```

- A. Class B
B. Error
C. Segmentation fault
D. No output

2. #include<iostream>
using namespace std;
class abc
{
public:
int i;
abc(int i)
{
i = i;
}
};

```
int main()
{
abc m(5);
cout << m.i;
return 0;
}
```

- A. 5
- B. Garbage
- C. Error at the statement i=i
- D. Compile error: 'i' declared twice

3. What will be the output of the following Python code?

```
def mk(x):
def mk1():
print("Decorated")
x()
return mk1
def mk2():
print("Ordinary")
p = mk(mk2)
p()
```

- A. Decorated
Decorated
- B. Ordinary
Ordinary
- C. Ordinary
Decorated
- D. Decorated
Ordinary

4. What will be the output of the following Python code?

```
>>>names = ['Amir', 'Bear', 'Charlton', 'Daman']
>>>print(names[-1][-1])
```

- A. A
- B. Daman
- C. Error
- D. n

5. What is the output of the following program?

```
#include<iostream>

using namespace std;
main() {
char s[] = "hello", t[] = "hello";
if(s==t)
cout<<"equal strings";
}
```

6. Justify the need for virtual function in C++.

7. What is the output of print tuple + tinytuple if tuple = ('abcd', 786 , 2.23, 'john', 70.2) and tinytuple = (123, 'john')?
8. How to create a list in python? Illustrate the use of negative indexing of list with example.

PART B - (4 X16 = 64 marks)

9. (a) (i) Write a program to find Maximum out of two numbers using friend function, here one number is a member of one class and the other number is a member of some other class. (10)
- (ii) Write a program which creates and uses array of objects of a class, implementing the list of managers of a company having details such as Name, Age, Salary, etc. (6)

(OR)

- (b) Write a program to design a class having static member function named showcount() which has the property of displaying the number of objects created of the class. (16)
10. (a) Create a class called LIST with two pure virtual function store() and retrieve(). To store a value call store and to retrieve call retrieve function. Derive two classes stack and queue from it and override store and retrieve. (16)

(OR)

- (b) (i) Write a program to perform addition of two complex numbers using constructor overloading. The first constructor which takes no argument is used to create objects which are not initialized, second which takes one argument is used to initialize real and imag parts to equal values and third which takes two argument is used to initialize real and imag to two different values. (8)
- (ii) Create class first with data members book no, book name and member function getdata() and putdata(). Create a class second with data members author name, publisher and members getdata() and showdata(). Derive a class third from first and second with data member no of pages and year of publication. Display all these information using array of objects of third class. (8)
11. (a) (i) Write a program to define the function template for calculating the square of given numbers with different data types. (10)
Define Time class with string containing seconds elapsed till midnight 12:00 AM as single data member. Write AddTime function which adds two time objects and returns a new time object. Write DisplayNormal function which converts the time in seconds and displays it in a normal fashion HH:MM:SS.
- (ii) (6)

(OR)

- (b) (i) Write a python program to compute the factorial a given number using the concept of Modules. (8)
Write a program to enter a number in Python and print its octal and
- (ii) hexadecimal equivalent. (8)

12. (a) (i) Write a Python program to create an instance of an OrderedDict using a given dictionary. Sort the dictionary during the creation and print the members of the dictionary in reverse order. (6)
- (ii) Illustrate using a python program to explain the various ways of creating sets and various operations on sets. (10)
- (OR)**
- (b) (i) Define a function that can accept two strings as input and print the string with maximum length in console. If two strings have the same length, then the function should print all strings line by line. (6)
- (ii) Define a class named Shape and its subclass Square. The Square class has an init function which takes a length as argument. Both classes have a area function which can print the area of the shape where Shape's area is 0 by default. (10)